



HOBBS OCD

AUG 08 2016

RECEIVED

OCCIDENTAL PERMIAN LTD

NORTH HOBBS UNIT

SEC. 24, T18S, R37E

NHU 24-687

NHU 24-687

Survey: MWD SURVEY

Standard Survey Report

07 April, 2016





GEOGUIDANCE DRILLING

Survey Report



Company:	OCCIDENTAL PERMIAN LTD	Local Co-ordinate Reference:	Well NHU 24-687
Project:	NORTH HOBBS UNIT	TVD Reference:	NHU 24-687 @ 3682.6usft (H&P 340)
Site:	SEC. 24, T18S, R37E	MD Reference:	NHU 24-687 @ 3682.6usft (H&P 340)
Well:	NHU 24-687	North Reference:	Grid
Wellbore:	NHU 24-687	Survey Calculation Method:	Minimum Curvature
Design:	NHU 24-687	Database:	EDM 5000.1 Single User Db

Project	NORTH HOBBS UNIT		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	SEC. 24, T18S, R37E		
Site Position:		Northing:	632,000.00 usft
From:	Map	Easting:	847,000.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 43' 56.582 N
		Longitude:	103° 12' 17.743 W
		Grid Convergence:	0.61 °

Well	NHU 24-687, SUR. N 630283.91 E 848387.01		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	3,682.8 usft
		Latitude:	32° 43' 39.458 N
		Longitude:	103° 12' 1.723 W
		Ground Level:	3,666.3 usft

Wellbore	NHU 24-687		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	3/11/2016	6.95
			Dip Angle (°)
			60.60
			Field Strength (nT)
			48,406

Design	NHU 24-687		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			20.97

Survey Program	Date 4/7/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
106.0	1,505.0	MultiShot Surveys (NHU 24-687)	EMS+IGRF
1,664.0	4,640.0	MWD SURVEY (NHU 24-687)	MWD+IGRF
			Description
			OWSG EMS + IGRF or WMM
			OWSG MWD + IGRF or WMM

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,505.0	0.70	154.80	1,505.0	-10.0	0.4	-9.2	0.00	0.00	0.00	
1,664.0	0.60	113.00	1,663.9	-11.2	1.6	-9.9	0.30	-0.06	-26.29	
1,844.0	4.60	24.10	1,843.7	-5.0	5.4	-2.7	2.57	2.22	-49.39	
2,024.0	7.90	19.90	2,022.7	13.2	12.6	16.9	1.85	1.83	-2.33	
2,204.0	10.77	23.26	2,200.3	40.3	23.5	46.0	1.62	1.59	1.87	
2,383.0	12.52	21.85	2,375.6	73.7	37.3	82.2	0.99	0.98	-0.79	
2,563.0	12.04	24.27	2,551.4	108.9	52.3	120.4	0.39	-0.27	1.34	
2,742.0	10.72	23.61	2,726.9	141.2	66.6	155.7	0.74	-0.74	-0.37	
2,922.0	9.10	21.33	2,904.2	169.8	78.5	186.6	0.93	-0.90	-1.27	
3,102.0	7.38	20.09	3,082.4	193.9	87.6	212.4	0.96	-0.96	-0.69	



GEOGUIDANCE DRILLING

Survey Report



Company:	OCCIDENTAL PERMIAN LTD	Local Co-ordinate Reference:	Well NHU 24-687
Project:	NORTH HOBBS UNIT	TVD Reference:	NHU 24-687 @ 3682.6usft (H&P 340)
Site:	SEC. 24, T18S, R37E	MD Reference:	NHU 24-687 @ 3682.6usft (H&P 340)
Well:	NHU 24-687	North Reference:	Grid
Wellbore:	NHU 24-687	Survey Calculation Method:	Minimum Curvature
Design:	NHU 24-687	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,282.0	5.75	23.46	3,261.2	213.0	95.2	233.0	0.93	-0.91	1.87
3,462.0	5.10	25.63	3,440.4	228.5	102.2	250.0	0.38	-0.36	1.21
3,642.0	4.57	26.29	3,619.7	242.2	108.9	265.1	0.30	-0.29	0.37
3,822.0	4.26	22.56	3,799.2	254.8	114.6	278.9	0.23	-0.17	-2.07
4,002.0	4.43	26.33	3,978.7	267.2	120.3	292.5	0.18	0.09	2.09
4,181.0	4.44	26.25	4,157.1	279.6	126.4	306.3	0.01	0.01	-0.04
4,361.0	4.66	22.69	4,336.6	292.6	132.3	320.6	0.20	0.12	-1.98
4,541.0	4.95	20.43	4,515.9	306.6	137.8	335.6	0.19	0.16	-1.26
4,625.4	4.95	20.43	4,600.0	313.4	140.4	342.9	0.00	0.00	0.00
Projected Survey @TD TVD									
4,640.0	4.95	20.43	4,614.6	314.6	140.8	344.2	0.00	0.00	0.00
Projected MD Well TD									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,511.0	1,511.0	Rustler (Base Red Beds)			
1,659.1	1,659.0	Top Salt			
2,738.0	2,723.0	Base Salt			
3,503.8	3,482.0	Queen			
3,816.8	3,794.0	Grayburg			
3,977.2	3,954.0	Basal Grayburg			
4,070.5	4,047.0	San Andres			

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,625.4	4,600.0	313.4	140.4	Projected Survey @TD TVD
4,640.0	4,614.6	314.6	140.8	Projected MD Well TD

Checked By: _____ Approved By: _____ Date: _____

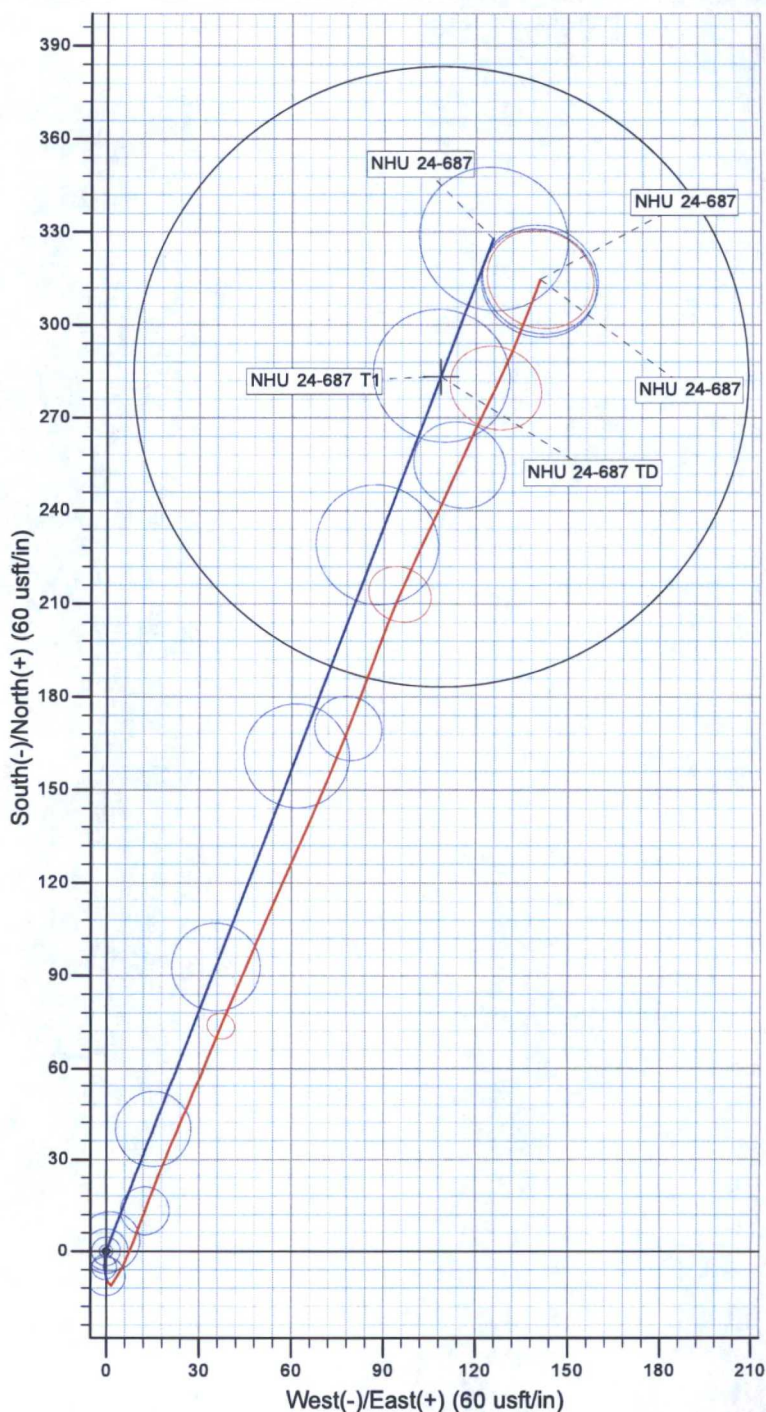
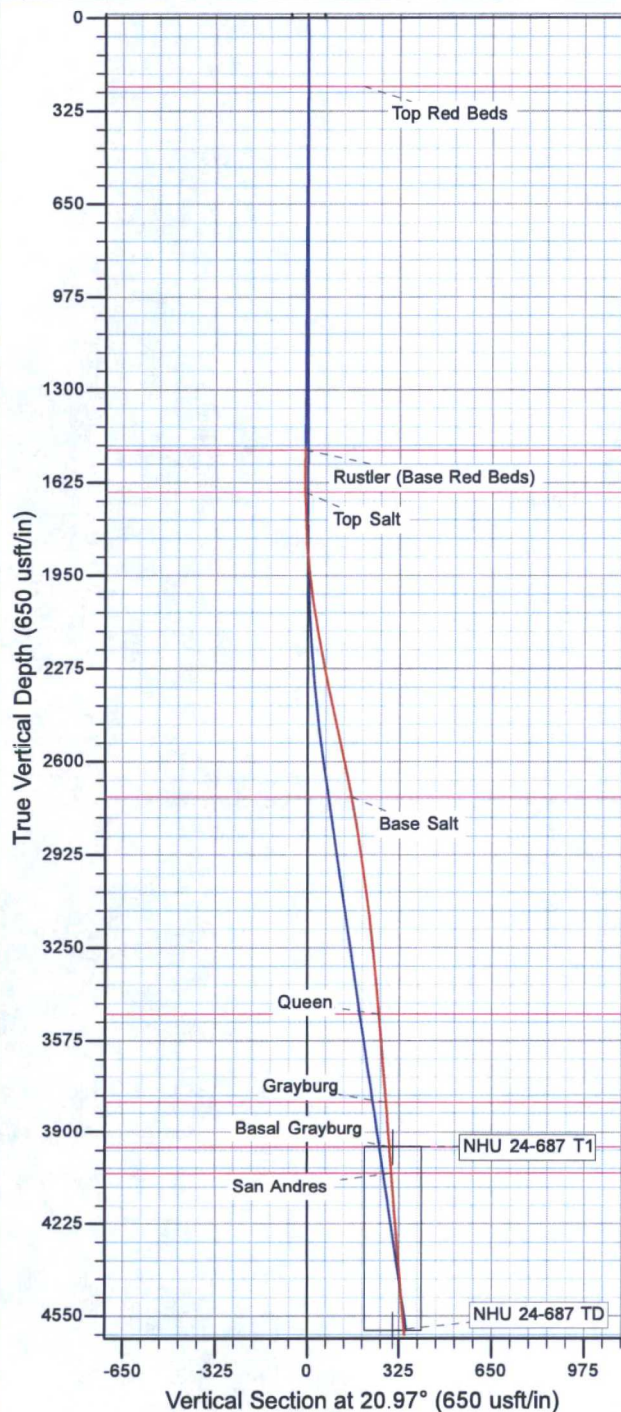


OCCIDENTAL PERMIAN LTD

Project: NORTH HOBBS UNIT
 Site: SEC. 24, T18S, R37E
 Well: NHU 24-687
 Wellpath: NHU 24-687
 Design: NHU 24-687



Azimuths to Grid North
 True North: -0.61°
 Magnetic North: 6.34°
 Magnetic Field
 Strength: 48405.9snT
 Dip Angle: 60.60°
 Date: 3/11/2016
 Model: IGRF2015



LEGEND

- NHU 24-687, NHU 24-687, 031116 V2 V0
- NHU 24-687
- MWD SURVEY

SECTION DETAILS

No plan data is available